

ABSTRACT OF THE DISCLOSURE

A cold hearth melting and refining arrangement for reactive or refractory metals utilizes an electron beam to automatically clean the perimeter of the pool of molten material in the hearth. A programmable logic controller is used to sweep the electron beam along at least a portion of the perimeter. The electron beam delivers energy to remelt or reevaporate volatile impurities that evaporate from the pool of molten material and redeposit on the perimeter.